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ABSTRACT

Establishing pricing policies for electronic publishing that are fair and flexible is of vital importance to the information industry. The pricing of most information available electronically is far less efficient and market-sensitive than it could be. Some of the new approaches to pricing, emphasizing a usage-based metric providing qualitative results, give information providers an effective means for increasing their market penetration and offer customers an affordable choice of options for the information they need. This paper provides a historical context for the discussion of pricing issues. It describes the special pricing challenges that confront providers of electronic information, presents alternatives to the fixed pricing models most commonly used today, and reviews several examples of new approaches to pricing made possible by technological advances. (Author/AEF)

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Creating new pricing models for electronic publishing

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Abstract: *The pricing of electronic information is a key element to its market success. Since the introduction of electronic information various models have been used to price information services. This paper provides a historical context for the discussion of pricing issues, describes the special pricing challenges confronting providers of electronic information, presents alternatives to the fixed pricing models most commonly used today and reviews several examples of new approaches to pricing made possible by technological advances.*

Keywords: unit pricing, fixed pricing, usage-based pricing, pricing models, cd-rom, internet, online

1. Introduction

Establishing pricing policies that are fair and flexible is of vital importance to the information industry. For information providers, pricing is a key element of competitive positioning, market penetration and profitability; for information users, pricing represents a principal determinant of access to information. Commercial enterprises necessarily charge 'what the market will bear,' a catch phrase that implies both efficiency and sensitivity to customer needs in the formulation of prices.

The pricing of most information available electronically is far less efficient and market-sensitive than it could be, however. This paper will provide a historical context for the discussion of pricing issues, describe the special pricing challenges that confront providers of electronic information, present alternatives to the fixed pricing models most commonly used today and review several examples of new approaches to pricing made possible by technological advances.

2. History

From the advent of electronic information, information providers have been challenged with pricing issues. Pricing metrics have been dictated by a combination of what is familiar and what is technologically possible. Before electronic information was available, information providers (referred to as publishers in those days) sold printed information by both a unit price metric, for example books (outright purchase), and journal subscription (annual fee per year). Purchasers 'owned' the printed materials they bought: if they discontinued a subscription, they kept what they subscribed to at that point.

These pricing metrics are predictable and consequently budgetable. The downside of printed information is that for some fields it is quickly out of date and requires large amounts of shelf storage space.

With the advent of online and the capacity to store vast amounts of information on mainframe computers, currency and storage issues were solved. However, the unit pricing metrics no longer fit. Publishers of electronic information were challenged with the tremendous costs of creating and maintaining electronic files, and vendors were challenged with the costs of developing search systems, loading and warehousing large files. In addition, there were telephone line charges to connect users with the mainframe computers. As a result, a usage-based pricing metric based on connect time was born. Users paid for the amount of time they were connected to the mainframe, plus additional charges for printing out specific information.

Usage pricing based on connect time solved some pricing issues: it provided a means to compensate information providers and vendors for using current information. It also created a new market for online training. Since pricing was based on connect time, it behoved the searcher to be an 'expert,' knowing all the right commands. Being an accurate and fast typist was also key. What the connect time metric did not solve were the issues of predictability and budgetability. It also necessitated an 'intermediary' who knew all 'the tricks' of the online system to keep costs to a minimum. Frequently this resulted in the actual end-user being a step removed from the information.

When standalone CD-ROMs entered the scene with their fixed (subscription) price metric, it solved some of the disadvantages of the online connect hour price metric. It provided unlimited searching for a fixed fee which encouraged high use. Search systems were designed for the end-user, removing the need for an intermediary to

do the search, and the length of time to perform a comprehensive search was no longer an issue (unless, of course, there was a queue of users waiting to use the same CD-ROM). The downside was establishing the 'right' subscription fee — high enough to compensate information provides and vendors and low enough to attract subscribers.

Enter the networked CD-ROM. The pricing metric was again re-visited by many information providers and, in general, variations of the fixed pricing method held. (See discussion below in Section 5, 'Discounts for high volume users'.)

With a strong tradition of fixed pricing resulting from CD-ROM, it is not surprising that many of the first Internet information offerings are based on fixed pricing, providing unlimited searching over a period of time for a fixed amount of money.

3. Why new pricing models are needed

The same technological advances that create new ways to package, distribute, use and sell information also create pricing dilemmas for providers. Powerful indexing and search tools allow information users to take advantage of the granularity of data in digital form by retrieving from large databases only those items that meet their search criteria. Records, once retrieved, can be tailored for use at will by means of copy and cut-and-paste commands, assuming no controls are in place. Customers desire and use information in discrete amounts. Yet when providers offer it in bulk, as is usually the case with CD-ROM databases, they risk creating unfulfilled demand and losing sales.

Pricing issues also have a security and copyright dimension. Providers are concerned about losing control over high-value electronic information that can be replicated an infinite number of times, accessed by and sent to thousands of potential users, and stored by any or all of them at a negligible cost. Inflexible pricing policies that force customers to buy large volumes of information actually worsen security and copyright protection problems because they create a strong economic incentive to cheat.

Intense interest generated by the Internet and the World Wide Web have brought pricing and related security issues to the fore. Expectations for a large, Internet-based market for information have excited not only futurists but also investors and information providers as well. Transacting business on the Web, while simple and cheap in theory, turns out to be technologically challenging and much costlier than many companies have bargained for (Ref 1). On the other hand, the Internet's origin as a free communications medium for researchers has contributed to an expectation among consumers for free or very low-priced information. Online services are responding to this demand by providing access to information available elsewhere at high prices as part of their basic subscription charges. An example is America Online's recent addition of historical stock quotes to its basic service (Ref 2).

The large amount of data stored on the current CD-ROM format, approximately 700 Mb without compression, also creates pricing dilemmas for providers. Typically, subscription pricing covers unlimited access to all the databases on a CD-ROM. Placing as much data as possible on a CD offers economies for providers and convenience for customers. And yet more data dictates higher prices, which limit sales. This problem will be greatly exacerbated by the advent of the next generation of this technology, DVD or digital versatile disc. DVD-ROM will increase the amount of data stored fourteenfold (Ref 3). How will pricing policies keep pace?

Linking price and use is the value customers place on information resources. Because information is increasingly disconnected from a physical medium — contrast a leather-bound book with a CD-ROM, for example — providers must constantly look for ways to support the price of a database with a high perception of value. The cost of subscribing to a single information resource for just one year can easily outstrip the cost of the hardware needed to access it. With hardware and operating costs dropping and performance rising, information providers can expect their customers to focus more attention on high fixed subscription costs.

A possible answer to the evolving pricing needs of the various distribution media lies in new commerce-enabling technologies such as information metering. By keeping track of usage by customers for billing purposes, metering facilitates the sale of electronic information. When deployed with supporting encryption, communications and database management technologies, metering makes it possible to sell information on a per-use or 'pay-as-you-go,' basis. This approach, which is only now becoming technologically feasible for CD-ROM and Internet-based delivery, offers the potential to bring into harmony the way information is used, valued and priced.

4. Fixed vs. per-use, or usage-based, pricing

The two most common ways of pricing goods and services are on either a fixed or a usage basis, and examples of each method abound in our everyday experience. Amusement parks, for example, may offer 'pay-one-price' entrance fees which cover the use of all rides, or they may offer a 'pay-as-you-go' approach and sell tickets for individual rides. In deciding between fixed and transaction pricing, assuming a choice is available, customers must consider how much use they are likely to make of the service. An expectation of heavy use points one toward the option with a price cap — fixed pricing — whereas an expectation of low use or uncertainty over the amount of use leads to the choice of variable usage pricing.

Fixed pricing has been used successfully for print media, such as books and periodical subscriptions, which typically do not lend themselves to usage-based pricing. Fixed annual subscription fees have been employed for

most information offerings on CD-ROM and for many early Internet offerings as well. In these cases, however, the lack of a practical method to implement usage-based pricing has dictated the use of fixed pricing rather than the needs of the marketplace.

Usage pricing in one form or another has been used for more than twenty years by the business, professional and financial sectors of the online industry. Extending the model used by long-distance carriers, online services have traditionally sold high-value information using a variety of connect time and volume charges, added to basic subscription or service fees. More recently, many leading online services have replaced time-based measures with output-based ones that charge for documents actually retrieved (Ref 4). The result of this shift allows search costs to be based more on qualitative results than on time spent searching databases.

The primary feature of fixed pricing — its predictability — has helped to position the CD-ROM as a cost-effective alternative to online services that base charges on connect time; thus, it appears to be market-sensitive (Ref 5). Fixed pricing by definition limits pricing flexibility, however, which affects both providers and their customers adversely. Information providers, for example, must pick one price to cover the use of large amounts of data over time. Too low a price loses revenues; too high a price loses customers. The conundrum for providers is that any single price will be both too high for some prospective customers and lower than what others, especially high-volume users, might pay. Information consumers, in turn, are forced to make all-or-nothing purchasing decisions. If they anticipate using a resource extensively and if they can afford the fixed purchase price, the decision will be positive: if these conditions are not met, their purchasing potential will remain untapped. Because fixed pricing limits revenues for providers and access to information for customers, its widespread use necessarily retards the market's growth.

Do markets prefer fixed or usage-based pricing? This question is not particularly apt since the two approaches are not necessarily in opposition. The key issue for provider and customer alike is how best to achieve a broader range of predictable pricing choices. Pricing schemes that combine fixed and usage-based pricing elements offer the best results for providers and a satisfactory range of choices for consumers. Such schemes are now common among the online services that charge annual subscription fees, which guarantee a base of revenues than can offset start-up and overhead costs, along with scheduled fees for documents actually retrieved.

5. Discounts for high-volume customers

Fixed subscription pricing discounts the cost of information to high-volume users in two ways. First, the fixed price functions as a price cap which means that the heaviest user of a service or resource pays the same price as the average or even occasional user. In this case the 'win' for the high-volume user comes at the expense of the provider, who would be able to charge more for a higher amount of information under a usage-based pricing scheme. Secondly, and more importantly, fixed pricing results in excessive volume discounts when applied to the pricing of information for network use.

Pricing schemes that list a range of prices for individual and multiple users give the impression of flexibility: one user pays less than five, five pay less than ten and so on. In fact, prices for network use of information are just as rigidly fixed as those for standalone users and arguably more so. Five heavy users of a resource, for example, pay the same price as five occasional users, assuming that pricing is based on the number of simultaneous users.

Because of the growth of networking, sales to networked users represent an increasingly important source of potential revenue; yet, providers commonly discount prices for large network installations by 75% or more, on a per-user basis, compared to subscription prices for individual users. It is imperative for providers to develop more effective, more logical and fairer pricing policies for information used on networks (Ref 6). Current approaches, which base pricing on a confusing array of criteria — such as the number of concurrent users, workstations, sites or employees in an organisation — are ill-suited to the needs of a growing marketplace and harm the interests of both provider and customer.

The thought of excessive discounts applied to high-value databases may please customers but the only true winners are the few organisations that can afford multiple-user licenses for all the information resources they desire. In most cases, smaller groups (even in large organisations) pay higher effective prices than larger ones and the relatively high fixed price of information limits the number of resources that can be purchased. A logical reaction to concurrent-user pricing has been the formation of consortia for the purchase of network licenses. These buying groups, mainly composed of academic libraries, take advantage of the high discounts that providers have extended to volume users. The possibility of diminishing revenues will undoubtedly force providers to re-examine their policies and search for better pricing approaches.

Usage-based pricing applied to the sale of networked information offers a way through the thicket. As long as information usage can be measured rationally and accurately, the intrinsic fairness of usage-based pricing will appeal to provider and customer alike. Customers who use a networked information resource intensively will pay more than the same number of customers who use it less. Usage-based pricing can eliminate the anomalies that occur when a large number of occasional users pay significantly more than a small number of heavy users, or when nodes are added to a network — requiring higher payment — but actual use of the information resource happens to decrease. Provided that all use is tracked for billing purposes, the need to police the number of authorised users or workstations disappears.

Usage-based pricing for network installations will also stimulate the growth of the market by providing

adequate financial incentives for providers and increased access to information for customers. It can also reduce the temptation to flout limitations on the number of authorised users, provided a secure metering system is in place. It is important to note that discounts to high-volume users are still feasible and will almost certainly be offered under usage-based pricing schemes, though the size of discounts need not be excessive or arbitrarily set. Other industries offer instructive examples. Carriers of long-distance telephone calls, for instance, offer a wide range of rate options and volume discounts for businesses within a usage-based pricing model that is universally accepted.

6. Examples of new pricing models

This section surveys three innovative information products or services that utilise usage-based pricing schemes.

6.1. Dow Jones News/Retrieval (DJNR)

Second only to LEXIS/NEXIS in the US market for online business and professional information, DJNR serves 233,000 subscribers. Its pricing has evolved since it abandoned traditional connect time measures three years ago in favour of an output-based scheme. With the Windows version that began shipping in June 1996, DJNR has completed the transition to pricing that relies primarily on charging customers for documents retrieved, an example of usage-based pricing. DJNR does include in its scheme elements of fixed pricing by charging customers a one-time start-up fee of $29.95 and an annual subscription fee of $19.95. The usage-based fees range from $.15 for stock quotes to $2.95 for articles found in DJNR's Publications Library (Ref 7).

DJNR continues the practice of offering fixed subscription pricing for large organisations. Rates start at $500 monthly ($6000 per annum) for five users. This tactic is an example of employing a price cap (actually a series of price caps) in order to provide a fair and logical discount to high-volume users. Because five low-volume users within an organisation could subscribe to the service individually at an initial annual cost of just $150 and then pay for documents retrieved, customers are offered a choice of payment methods that correspond to their needs.

6.2. Harvard Business School Publishing

This subsidiary of Harvard Business School has begun distributing a CD-ROM catalogue containing *Harvard Business Review* articles and Harvard Business School case studies, and selling them on a pay-per-use basis. A major benefit for users is the ability to have immediate access to the full text of HBR articles and HBS case studies. Until now, customers desiring reprints would have to order the items by phone or mail and wait until they were delivered. Using technology provided by CD-MAX Inc., users can access these important materials on their desktops whenever they need them. Customers can search the index to identify items of interest and use a hyperlink function to connect to the full-text items.

Harvard Business School Publishing is using CD-MAX technology and supporting services to register and bill customers, track and report full-text usage and ensure data security. A special feature facilitates internal billing by enabling customers to track the cost of full-text usage by department.

6.3. IBM InfoMarket

IBM offers one of the first usage-based information services that is available exclusively via the Internet. Its InfoMarket offers information from more than 7000 sources, including such well-known North American providers as American Business Information, Hoover's and Engineering Information. Customers register with the InfoMarket service by providing billing information, including a credit card number. Like the competing service from NLightN, IBM uses a purely usage-based pricing scheme; no start-up or annual subscription fees are currently charged. Content owners or rights holders set the per-document prices, which range from gratis to $3.50 and higher for proprietary information.

IBM InfoMarket has positioned itself as an information aggregator, providing a new distribution channel for companies that may not wish to invest the resources needed to engage in pay-per-use commerce on the Internet or a supplementary channel for companies that have their own Internet initiatives. The key to selling information on the open Internet lies in IBM's use of 'Cryptolopes,' a proprietary encryption method that seals content in envelopes that can only be opened by registered customers. This approach distinguishes IBM InfoMarket from competitors such as NLightN which do not currently prevent copying or retransmission of copyrighted materials.

7. Conclusion

New technologies create the need for as well as the ability for developing new pricing models. Some of the new approaches to pricing, emphasising a usage-based metric providing qualitative results, give information providers an effective means for increasing their market penetration and offer customers an affordable choice of options for the information they need.

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